

Advanced Services' Cisco ONS Time Division Multiplexing (TDM) SONET Release 9.2 (ONS_TDM_SONET) v1



This lab-intensive course introduces you to the Cisco® Optical Network System (ONS) time-division multiplexing (TDM) family of transport products. The Cisco ONS 15454, ONS 15600, ONS 15310-MA, and ONS 15310-CL are SONET transport system components that can be mixed and matched to create high-speed optical transport networks. You will learn about the SONET optical hierarchy OC-3 (155 Mbps), OC-12 (644 Mbps), OC-48 (2.5 Gbps), and OC-192 (10 Gbps). You will learn how DS-1 (1.5 Mbps) and DS-3 (45 Mbps) electrical signals are carried in the SONET optical links. The course covers Ethernet circuits at Layer 1 and Layer 2 using CE and ML cards. Included in this course is how to configure and build circuits through the ADM10G card, a TDM card in the ONS 15454 DWDM system. The course covers electrical, Ethernet, and optical protection options; linear and ring topologies; circuit building; and troubleshooting. Each student team has an ONS 15454, ONS 15600, ONS 15310-MA, and ONS-15310-CL to work with.

Duration

Five days.

Target Audience

This course is intended for maintenance personnel, transport engineers, and managers who require a detailed understanding of SONET transport network components, interconnection, circuit building, and maintenance.

Course Objectives

Upon completion of this course, you should be able to:

- List and describe the major features and benefits of the Cisco ONS SONET products
- Set up and use the PC to connect to the ONS SONET network
- Provision the shelf for 1:1 and 1:N electrical protection

- Provision the shelf for optical protection 1+1, path ring, and line ring
- Create circuits at the DS3 and VT1.5 levels
- Provision Ethernet ports and create circuits between Ethernet components
- Provision the ADM-10G DWDM card and install circuits
- Move circuits using the bridge-and-roll capability of Cisco SONET system

Course Prerequisites

Although there are no course prerequisites, knowledge of DS1, DS3, and SONET would be highly useful.

Course Outline

- Cisco ONS 15454 and 15310 Product Overview
- Introduction to SONET
- Safety in ONS Systems
- Optical Fiber Practices
- Cisco ONS Documentation
- Cisco ONS 15454 MSPP Shelf Layout and Components
- Cisco ONS 15310 Shelf Layout and Components
- Cisco ONS 15600 Shelf Layout and Components
- Cisco ONS System Setup and Login
- Timing for SONET
- Cisco ONS Protection Groups
- Point-to-Point and Linear Add-Drop Multiplexer Configurations
- Cisco ONS Circuits and Cross-Connections
- Cisco ONS Path Protection Rings
- Cisco ONS Virtual Tributary Tunnels and Circuits
- Cisco ONS Line Protection Rings
- Cisco ONS Path-Protected Mesh Network
- Maintenance and Performance Monitoring
- Loopbacks in Fiber, Copper, and Coax
- Introduction to Ethernet
- Cisco ONS Multiservice over SONET Applications
- ML1 Cards and Rapid Protection Data Ring
- ML2 Cards Aggregation and IEEE RPR Ring
- Bridge-and-Roll Circuit Feature
- Introduction to ADM10G Card
- Protection in the ADM-10G Subnetwork
- Circuits in the ADM-10G Subnetwork
- Delete a Line-Switched Node
- Add a Line-Switched Node

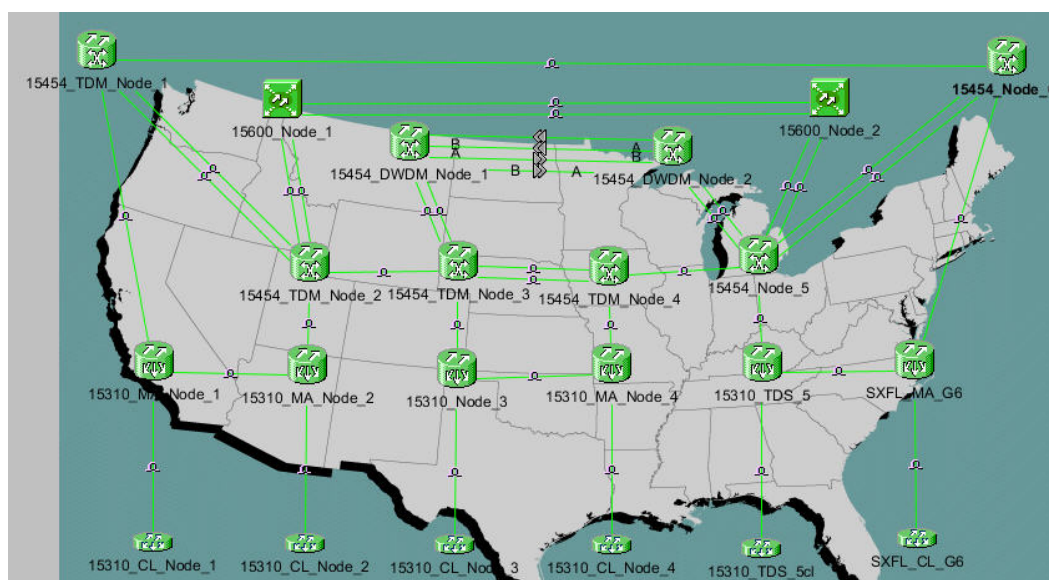
Lab Outline

- Lab 1: Cisco Transport Controller Setup and Login
- Lab 2: Configuring SONET Timing
- Lab 3: Setting Up Protection Groups
- Lab 4: Provisioning and Testing a Point-to-Point Network
- Lab 5: Creating Manually Routed DS3 Circuits
- Lab 6: Creating a Path-Protected Ring
- Lab 7: Creating VT1.5 Tunnels and DS-1 Circuits
- Lab 8: Creating a Two-Fiber Line-Protected Ring
- Lab 9: Creating a Path-Protected Mesh Network
- Lab 10: Creating and Testing Ethernet Circuits
- Lab 11: Creating ML1 Card Rapid Protection Data Ring
- Lab 12: Installing Ethernet Aggregation Using CE Cards and ML-MR-10
- Lab 13: Creating 802.17 RPR Using ML-MR-10
- Lab 14: Bridge-and-Roll Circuits
- Lab 15: Setting Up SONET Links to ADM-10G with Protection
- Lab 16: Configuring Circuits in ADM-10G Subnetwork
- Lab 17: Deleting Line-Switched Node
- Lab 18: Adding Line-Switched Node
- Lab 19: Troubleshooting Lab

Lab Topology

The labs are performed using Cisco ONS transport equipment. An ONS 15454 node, an ONS 15310-MA node, and an ONS 15310-CL node are available for each student group. These nodes are connected using optical 1+1, path-protected ring, and line-protected ring. Figure 1 shows the network as displayed on Cisco Transport Controller.

Figure 1 Training Network as Displayed on Cisco Transport Controller



Registration Information

For more information about schedules and registration for this course, contact aeskt_registration@cisco.com.

For More Information

For more information about Advanced Services Education course offerings, including custom training options, as well as Advanced Services Curriculum Planning Services and the Advanced Services Technical Knowledge Library (TKL), refer to the Advanced Services Education website at www.cisco.com/go/ase.



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